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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,500	01/10/2002	Tomoyuki Fujii	791_182	9278
25191	7590	11/18/2003	EXAMINER	
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068			KITOV, ZEEV	
			ART UNIT	PAPER NUMBER
			2836	

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/044,500

Applicant(s)

FUJII ET AL.

Examiner

Zeev Kitov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on September 4, 2003. Claims 1 - 5 are amended. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 5 recites the limitation "said sheet" in page 8, line 17 of Amendment.

There is insufficient antecedent basis for this limitation in the claim. For purpose of examination it was interpreted as "layer". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga (US 6,256,187) in a view of Tomaru et al. (US 6,071,630). Matsunaga discloses most of the elements of Claim 1 including an electrostatic chuck having a

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bonded structure comprising a ceramic electrostatic chuck member (element 22 in Fig. 1, col. 4, lines 1 – 18), a metal member (element 12 in Fig. 1), and a first and second bonding layers (elements 20 and 14 in Fig. 1); the first bonding layer is being bonded to the ceramic chuck, the second bonding layer is bonded to the metal member (element 12 in Fig. 1); it further discloses a polyimide layer (element 14 in Fig. 1, col. 6, lines 3-16) being disposed between said first and second most outer bonding layers. It further discloses a structure of an adhesive sheet (Fig. 7, col. 8, lines 53 – 67, col. 9, lines 1 – 21), which includes polyimide film (element 14 in Fig. 7) sandwiched between two external layers (elements 42 in Fig. 7). These external layers include silicone resin (col. 9, lines 16 – 21). However, it does not disclose the silicone bonding layers. Tomaru et al. discloses the silicone bonding layers (elements 18 and 20 in Fig. 1 and 2, col. 2, line 66 – col. 3, line 14, col. 5, lines 18 - 32). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Matsunaga solution by adding the bonding silicone layers, because of the silicon advantages, such as, according to Tomaru et al. (col. 1, lines 63 – 67), the excellent thermal conductivity and heat dissipation and ability to withstand high temperatures.

2. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga in a view of Tomaru et al. and further in a view of Court Decision *In re Aller*, 105 USPQ 233. As was stated above, Matsunaga and Tomaru et al. disclose all the elements of Claim 1. Regarding Claim 2, Tomaru et al. disclose the thickness of bonding layer as being 0.1 to 30 μm (col. 6, lines 15 – 17), while Applicant uses 50 – to

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500 μm . There is a minor gap between two ranges. The Court Decision addresses this issue stating that discovering the optimum or workable ranges does not represent a novelty or an innovative step. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the enlarged bonding layers thickness, because as Court Decision states, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

As to Claim 4, the same considerations given above with regard to Claim 2 rejections are applicable.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga in a view of Tomaru et al. and further in a view of Parkhe (US 5,909,355). As was stated above, Matsunaga and Tomaru et al. disclose all the elements of Claim 1. However, regarding Claim 3, they do not disclose a base material made of aluminum nitride and being sintered with an electrostatic chuck electrode. Parkhe discloses the electrostatic chuck having a base material made of aluminum nitride (element 206 in Fig. 3) and being sintered with an electrostatic chuck electrode (col. 3, lines 53 –67 and col. 4, lines 1 – 35). Both patents have the same problem solving area, namely design of the electrostatic chucks. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Matsunaga system by using the aluminum nitride ceramic, which is sintered with an electrostatic chuck electrode according to Parkhe, because according to Parkhe (col. 1,

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lines 44 – 67, col. 2, lines 1 –13), this will resolve a problem of reduced ceramic resistivity at high temperatures.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga in a view of Tomaru et al. and further in a view of McMillin et al. (US 5,835,334). As was stated above, Matsunaga and Tomaru et al. disclose all the elements of Claim 1. However, regarding Claim 4, they do not disclose a value of flatness of an adsorption surface in the electrostatic chuck as being 30 μm or less. McMillin discloses the flatness as being of 0.001 inches, which is slightly smaller than a value of 30 μm cited in the claim. Both patents have the same problem solving area, namely design of the electrostatic chucks. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used ceramic material with the flatness of 0.001 inch according to McMillin et al. in the electrostatic chuck of Matsunaga, because as McMillin states (col. 4, lines 30 – 36), the coating should be non-porous and provide an electrical voltage breakdown strength of at least 500 volts/mil. As well known in the art, reduction in a degree of a surface flatness increases the voltage breakdown value.

5. As per Claim 5, in addition to the limitations of Claim 1 it includes limitations of a device manufacturing process. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga in a view of Tomaru et al. and further in a view of Weldon et al. (US 6,108,189). Weldon et al. discloses a manufacturing process of a composite

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dielectric member having a polyimide as one of its layers (col. 23, lines 20 – 25). The disclosed manufacturing process includes placing of multiplayer structure into a vacuum-packing bag (col. 23, lines 63 – 65) and heating the vacuum-packed dielectric member under isotropic (isostatic) pressure (col. 23, lines 65 – 67). As to sandwiching the layer between the ceramic electrostatic chuck member and the metal member, this step is inherent in the manufacturing process due to its structure, which was addressed above. Both patents have the same problem solving area, namely design of electrostatic chucks. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the manufacturing process according to Weldon et al. for manufacturing of the electrostatic chuck of Matsunaga, because as Weldon et al. states (col. 23, lines 40 – 46), the composite dielectric member can be manufactured by a variety of conventional methods including isostatic pressing thermal spraying, sputtering, CVD, PVD, solution coating, or sintering a ceramic block with the embedded electrode. The thermal isostatic pressure is one of the methods. A selection of particular method is up to the designer according to his secondary specification requirements.

Response to Argument


In his Arguments about rejection of every claim in the Office Action the Applicant consistently stated that the Matsunaga reference does not disclose the silicone layer adhesive elements. This argument is met by a new reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose telephone number is (703) 305-0759. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (703) 308-3119. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Z.K.
11/16/2003



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
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